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EXAMINER	
MURATA, AUSTIN	

ART UNIT	PAPER NUMBER
4171	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,067	DISS ET AL.	
	Examiner	Art Unit	
	AUSTIN MURATA	4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/26/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *9-11 and 14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8, 12 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/2/2007 and 1/26/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is a nonfinal office action.

Claims 9-11 and 14 have been withdrawn from consideration by the restriction election received 10/29/2009.

Claims 1-8 and 12-13 have been examined.

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-8 and 12-13, drawn to a method of protecting a part.

Group II, claim(s) 9-11 and 14, drawn to a composite material part containing carbon.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the same technical feature linking the method and product is the protective coating containing titanium diboride which is not considered special as the prior art de NORA et al. (US 6,228,424) column 4 line 47 teaches using TiB_2 as a particle used in coatings to help prevent oxidation.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement

may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. During a telephone conversation with MR. CHARLES GAGNEBIN on 10/29/2009 a provisional election was made with traverse to prosecute the invention of group 1, claims 1-8 and 12-13. Affirmation of this election must be made by applicant in replying

to this Office action. Claims 9-11 and 14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the

above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder**. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Priority

6. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-5, 7-8, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by MOREL (US 5,420,084).

9. Regarding claim 1,

10. MOREL teaches in the abstract, "The coating according to the invention can, for example, efficiently protect carbon and graphite" (A method of protecting a part made of composite material containing carbon against oxidation). In column 5 line 24, "test-pieces made of carbon/carbon composite used for aircraft brakes" (the part presenting residual open internal pores). Column 2 line 20-21, "double purpose [adhesion and protection] is served in particular by a deposit based on zinc phosphate or aluminum

phosphate" (comprising using a solution containing at least one metal phosphate). MOREL also teaches in column 1 line 32 that it is commonly known in the art to use protective coatings based on, "phosphates or borates." Presumably, it is fine to use both. More specifically you could use, "zinc phosphate or aluminum phosphate" column 2 line 20-21 with, "titanium diboride column 2 line 56" as they demonstrate protective properties (applying an impregnation composition containing at least one metal phosphate and titanium diboride).

11. Regarding claim 2,

12. MOREL teaches that zirconium diboride can be replaced with titanium diboride as taught in column 2 line 56. In column 2 line 25-26, the zirconium diboride, or titanium diboride, preferably having a particle size of 10 to 40 microns. (titanium diboride is present in the impregnation composition in the form of powder having grain size lying in the range 0.1 μm to 200 μm).

13. Regarding claims 3-4,

14. MOREL teaches, "the colloidal silica is intimately mixed with the diboride" column 2 line 26 (the impregnation composition also contains a refractory solid filler) (the additional refractory solid filler is selected from silica, aluminum, clays, kaolin, and talc).

15. Regarding claim 5,

16. MOREL also teaches in column 1 line 32 that it is commonly known in the art to use protective coatings based on, "phosphates or borates." Presumably, it is fine to use both. More specifically you could use, "zinc phosphate or aluminum phosphate" column 2 line 20-21 with the, "titanium diboride" column 2 line 56 as they demonstrate the

desired protective properties (the impregnation composition contains at least one metal phosphate selected from aluminum, zinc, and magnesium phosphates).

17. Regarding claim 7,

18. Column 2 line 14, "to improve the adhesion of the coating to the substrate, it is preferable to deposit an adhesive underlayer on the substrate." Under example 3 in column 5, line 37-42 zinc phosphate was pretreated followed by direct heating. (preliminary stage of treating the composite material by impregnating it with a solution containing a wetting agent, and drying it, so as to confer wettability on the composite material that is increased by the presence of the wetting agent.)

19. Regarding claim 8,

20. Morel teaches in column 2 line 20-21, "double purpose [adhesion and protection] is served in particular by a deposit based on zinc phosphate or aluminum phosphate" (at least one step of applying a solution of at least one metal phosphate without any solid filler) MOREL then teaches in column 2 line 22 "coating... commercial zirconium diboride." The zirconium diboride can be replaced with titanium diboride as taught in column 2 line 56 (prior to applying the impregnation composition containing at least metal phosphate in solution and titanium boride).

21. Regarding claim 12,

22. MOREL teaches, "the colloidal silica is intimately mixed with the diboride" column 2 line 26 (the impregnation composition also contains a refractory solid filler)

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

24. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

25. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over MOREL (US 5,420,084) in view of DWIVEDI et al. (US 5,526,914) and evidenced by CHAPMAN et al. (US 4,711,666).

26. Regarding claim 6,

27. MOREL teaches the formation of a protective layer using the same basic chemicals and pretreatment, however does not explicitly teach the weight percent water in the composition.

28. Although, presumably, there is some because a colloidal solution of silica is used followed by the need for a drying step. A working colloidal solution of silica contains

water as evidenced by CHAPMAN et al. column 3 lines 12-17 "consists of 8 millimicron silica spheres in a dispersion… and is a watery liquid." DWIVEDI et al. teaches the colloidal silica behaves the same way as aluminum phosphate as a reactive barrier, column 10 lines 28-29. In terms of preventing oxygen from diffusing through the coating, a process could use colloidal silica as MOREL does or any combination of colloidal silica and aluminum phosphate. The weight percent of colloidal silica can be replaced from the original 25% in any portion with aluminum phosphate, from MOREL column 3 line 29 (20%-70% metal phosphates). The weight of zirconium/titanium diboride stays the same as in MOREL (45%) (5-50% titanium diboride). There is also a silica carbide composition of 30% (0%-40% refractory solid filler). The same composition would presumably require the same amount of water to disperse into a solution that can be sprayed, see MOREL column 2 line 30 and disclosed specification page 4 line 4, onto the substrate (20%-50% water).

29. At the time of the invention it would have been *prima facie* obvious to one of ordinary skill in the art to combine the reference of DWIVEDI et al. with the method of MOREL because when creating a protective coating to prevent oxidation, the two mechanisms known in the art is providing a physical barrier for the oxygen or poisoning the active sites with a reactive barrier. Both mechanisms can be used in the same coating so it would be obvious to use a component that is known as a recognized equivalent, see MPEP 2144 I.

30. Regarding claim 13,

31. MOREL teaches, "the colloidal silica is intimately mixed with the diboride" column 2 line 26 (the additional refractory solid filler is selected from silica, aluminum, clays, kaolin, and talc).

32. MOREL also teaches in column 1 line 32 that it is commonly known in the art to use protective coatings based on, "phosphates or borates." Presumably, it is fine to use both. More specifically you could use, "zinc phosphate or aluminum phosphate" column 2 line 20-21 with the, "titanium diboride" column 2 line 56 as they demonstrate the desired protective properties (the impregnation composition contains at least one metal phosphate selected from aluminum, zinc, and magnesium phosphates).

33. Morel teaches in column 2 line 14, "to improve the adhesion of the coating to the substrate, it is preferable to deposit an adhesive underlayer on the substrate." Under example 3 in column 5, line 37-42 zinc phosphate was pretreated followed by direct heating. (preliminary stage of treating the composite material by impregnating it with a solution containing a wetting agent, and drying it, so as to confer wettability on the composite material that is increased by the presence of the wetting agent.)

34. Morel teaches in column 2 line 20-21, "double purpose [adhesion and protection] is served in particular by a deposit based on zinc phosphate or aluminum phosphate" (at least one step of applying a solution of at least one metal phosphate without any solid filler) MOREL then teaches in column 2 line 22 "coating... commercial zirconium diboride." The zirconium diboride can be replaced with titanium diboride as taught in column 2 line 56 (prior to applying the impregnation composition containing at least metal phosphate in solution and titanium boride).

35. MOREL teaches the formation of a protective layer using the same basic chemicals and pretreatment, however it does not explicitly teach the weight percent water in the composition. Although, presumably, there is some because a colloidal solution of silica is used followed by the need for a drying step. A working colloidal solution of silica contains water as evidenced by CHAPMAN et al. column 3 lines 12-17 "consists of 8 millimicron silica spheres in a dispersion... and is a watery liquid." DWIVEDI et al. teaches the colloidal silica behaves the same way as aluminum phosphate as a reactive barrier, column 10 lines 28-29. In terms of preventing oxygen from diffusing through the coating, a process could use colloidal silica as MOREL does or any combination of colloidal silica and aluminum phosphate. The weight percent of colloidal silica can be replaced from the original 25% in any portion with aluminum phosphate, from MOREL column 3 line 29 (20%-70% metal phosphates). The weight of zirconium/titanium diboride stays the same as in MOREL (45%) (5-50% titanium diboride). There is also a silica carbide composition of 30% (0%-40% refractory solid filler). The same composition would presumably require the same amount of water to disperse into a solution that can be sprayed, see MOREL column 2 line 30 and disclosed specification page 4 line 4, onto the substrate (20%-50% water).

36. At the time of the invention it would have been *prima facie* obvious to one of ordinary skill in the art to combine the reference of DWIVEDI et al. with the method of MOREL because when creating a protective coating to prevent oxidation, the two mechanisms known in the art is providing a physical barrier for the oxygen or poisoning the active sites with a reactive barrier. Both mechanisms can be used in the same

coating so it would be obvious to use a component that is known as a recognized equivalent, see MPEP 2144 I.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AUSTIN MURATA whose telephone number is (571)270-5596. The examiner can normally be reached on Monday through Friday 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Barbara Gilliam can be reached on 571-272-1330. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/AUSTIN MURATA/
Examiner, Art Unit 4171

/PATRICK NOLAN/
Supervisory Patent Examiner, Art Unit 4171